

**REMARKS**

Claims 1-5 are pending in this application. By this Amendment, claims 1, 4 and 5 are amended. The amendments to claims 1, 4, and 5 are made solely to improve the clarity of those claims. Support for the amendments to claims 1, 4, and 5 can be found, for example, in original claims 1, 4, and 5. No new matter is added. In view of the foregoing amendments and following remarks, reconsideration and allowance are respectfully requested.

Applicants appreciate the courtesies shown to Applicants' representative by Examiner Mullis in the August 18, 2005 personal interview. Applicants' separate record of the substance of the interview is incorporated into the following remarks.

**Allowable Subject Matter**

Applicants thank the Examiner for the indication that claims 4 and 5 contain allowable subject matter.

**Claim Objection**

The Office Action objects to claim 3 as failing to further limit the claim from which it depends. In particular, the Office Action asserts that claim 3 does not further limit claim 1 because a "silica sol," as recited in claim 3, is the same as a "colloidal silica," as recited in claim 1.

Applicants submit that claim 3 does not merely recite a "silica sol." Rather, claim 3 recites an "aqueous silica sol" (emphasis added). The instant specification clearly indicates that, as the colloidal silica (see claim 1), "both an aqueous silica sol and an organo silica sol can be used." See instant specification, paragraph [0023]. Accordingly, claim 1 reads on at least both an aqueous silica sol and an organo silica sol, while claim 3 reads only on an aqueous silica sol. Accordingly, claim 3 further limits claim 1.

For the foregoing reasons, withdrawal of the objection is respectfully requested.

**Rejection Under 35 U.S.C. §102/§103**

The Office Action rejects claims 1-3 under 35 U.S.C. §102(b), or in the alternative under 35 U.S.C. §103(a), over U.S. Patent No. 3,846,453 to Erneta ("Erneta"). Applicants respectfully traverse the rejection.

Claim 1 recites "[a] process for producing spherical composite cured melamine resin particles, comprising: reacting a melamine compound with an aldehyde compound in an aqueous medium under a basic condition in the presence of a suspension of colloidal silica having an average particle size of 5 to 70 nm to produce an aqueous solution of a precondensate of water-soluble melamine resin; and adding an acid catalyst to the aqueous solution to separate out spherical composite cured melamine resin particles" (emphasis added). Erneta does not teach or suggest such a process.

The Office Action asserts that Erneta discloses combining sodium silicate, melamine and formaldehyde. The Office Action further asserts that the mixture of sodium silicate, melamine and formaldehyde are acidified to precipitate amino resin-silica polymeric composite microspheres or microcapsules having particles sizes as low as 50 nanometers. Notwithstanding these assertions, Erneta does not anticipate, and would not have rendered obvious, the process of claim 1.

Claim 1 requires, *inter alia*, that a melamine and an aldehyde be reacted in the presence of a suspension of colloidal silica having an average particle size of 5 to 70 nm. The Office Action includes much discussion of the particle size of aminoresin-silica composite particles obtained according to Erneta ("Erneta discloses 'microspheres or microcapsules' having individual particle sizes of as low as '0.05' microns, i.e. 50 nanometers"; "Although it is not disclosed what the particle size of the melamine particles where which will [sic] run under identical conditions, as set out above column 1 lines 10-15 discloses that particle sizes are as low as 50 nanometers"). Applicants note that claim 1 includes no recitation regarding the size of spherical composite cured melamine resin particles obtained by the recited process.

Rather, the only particle size recited in claim 1 is the particle size of colloidal silica used as a reactant. Erneta's disclosure with respect to particle sizes of amimoresin-silica composite particles does not teach or suggest the particle sizes of colloidal silica recited in claim 1.

It should further be appreciated that Erneta provides no explicit teaching or suggestion that a melamine and an aldehyde are reacted in the presence of a colloidal silica, much less that the colloidal silica should have a particle size of from 5 to 70 nm. Rather, Erneta discloses that a melamine and formaldehyde are reacted in the presence of a sodium silicate solution. *See, e.g.*, column 2, lines 4 to 6. The Office Action appears to assert, however, that colloidal silica having a particle size of from 5 to 70 nm, would "reasonably appear" during a first phase of the reaction disclosed in Erneta (i.e., when melamine, formaldehyde and sodium silicate are mixed together, pH of the mixture is lowered, and the mixture is heated, *see* column 2, lines 15 to 17). In support of this assertion, the Office Action relies on a passage in *The Chemistry of Silica*, which recites

It remains in the monomeric state for long periods in water at 25°C, as long as the concentration is less than about  $2 \times 10^{-3} M$ , but polymerizes, usually rapidly at higher concentrations, initially forming polysilicic acids of low molecular weight and then larger polymeric species recognizable as colloidal particles.

*See* page 10. This passage, however, leaves more questions than answers: at what temperatures, concentrations, pH does such polymerization occur? at what concentrations does polymerization? how long does polymerization take to occur? do the teachings of this passage apply identically when an amine and an aldehyde are present? One certainly could not conclude based on this teaching that colloidal silica having an average particle size of 5 to 70 nanometers is necessarily present during the first phase of the reaction disclosed in Erneta. As is well settled, "[i]nherency, however, may not be established by probabilities and possibilities. The mere fact that a certain thing may result from a given set of circumstances

is not sufficient." See MPEP §2112.IV (quoting *In re Robertson*, 169 F.3d 743, 745 (Fed. Cir. 1999)).

Notwithstanding that the Office Action fails to show that Erneta teaches or suggest reacting a melamine and an aldehyde in the presence of a suspension of colloidal silica having an average particle size of 5 to 70 nm, Applicants have, through experimentation, demonstrated that Erneta does not, in fact, disclose such a reaction. In particular, Applicants have conducted an experiment in which the first phase of Example 6 of Erneta was reproduced. After completion of the first phase of Example 6, the products of the disclosed reaction were compared by electron microscopy with particles of known size. As evidenced by the Declaration attached hereto, during the first phase of the reaction in Example 6 of Erneta, no particle is produced having a particle size greater than 4 nanometers. See e.g., Declaration, paragraph 6, FIGS. 1 and 2. The experimental evidence in the attached Declaration thus confirms that Erneta does not teach or suggest, explicitly or inherently, reacting a melamine and an aldehyde in the presence of a suspension of colloidal silica having an average particle size of 5 to 70 nm. Accordingly, Erneta fails to teach or suggest each and every limitation of claim 1.

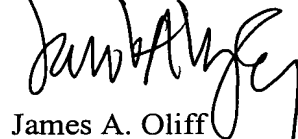
Claim 1 is not anticipated by and would not have been rendered obvious by Erneta. Claims 2 and 3 depend from claim 1 and, thus, also are not anticipated by and would not have been rendered obvious by Erneta. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

#### Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-5 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,



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JAO:JAD/hs

Attachment:

Rule 132 Declaration of Masaaki Ozawa

Date: August 18, 2005

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